FreedomCAR & Vehicle Technologies Program

Protecting Our Transportation Freedoms

Toward a New Energy Scenario

Today, America imports more than half of the oil we consume, much of it for transportation use.[1] Unless action is taken, the historical trend toward increasing dependence on foreign oil will continue. In fact, the percentage of oil imports is projected to rise to 62 percent by 2020.

How can our nation change this scenario? Vital answers are being provided by the long-term research, development, and demonstration (RD&D) efforts conducted by the U.S. Department of Energy's FreedomCAR and Vehicle Technologies Program. The Program pursues advanced technologies for cars, light trucks, and heavy vehicles that will reduce oil use, with a focus on RD&D activities that industry views as too high-risk or uncertain to pursue on its own. The Program also addresses the introduction of technology, and includes legislative rulemaking and implementation as required by the Energy Policy Act.

FreedomCAR Partnership

The Program has a central role in the FreedomCAR Partnership, announced in January 2002 by Energy Secretary Abraham and executives from DaimlerChrysler, Ford Motor Company, and General Motors. Through the Partnership, DOE and the automakers are investing in fundamental, high risk research and development that will open the way to entirely new ways to power tomorrow's vehicles. Special emphasis is on development of fuel cells and hydrogen infrastructure technologies—technologies that can meet our nation's transportation needs using virtually limitless, reliable, and domestically-produced energy that is free from harmful emissions.

The FreedomCAR Partnership, undertaken with the U.S. Council for Automotive Research, supersedes and builds on the successes of the Partnership for a New Generation of Vehicles (PNGV), which began in 1993. FreedomCAR[2] shifts government research to more fundamental, higher risk activities, with applicability to multiple passenger vehicle models.

Significant Savings Potential

- *America's highway transportation is 97 percent dependent on oil, a growing portion of which is imported.*[3]
- *Oil imports—a major component of the balance of trade accounts—are projected to account for more than $170 billion of our nation's trade deficit by 2020.*
- *Reducing highway oil use has more potential to improve the nation's energy security than any other action.*
- *The fastest growth in oil use is projected in light trucks (including pickups, vans, and sport utility vehicles) and heavy vehicles (including trucks and buses).*
- *Given the enormous amount of motor fuel used each year, even a one percent improvement in vehicle fuel efficiency would save consumers about $2 billion annually.*

[1] Transportation currently accounts for 69 percent of U.S. oil consumption.
[2] The C-A-R in FreedomCAR is an acronym for Cooperative Automotive Research.
[3] The total U.S. transportation sector, including aviation, is 95 percent dependent on oil.

FreedomCAR supports transportation freedoms for the United States: freedom from petroleum dependence; freedom from pollutant emissions; freedom for citizens to choose the vehicles they want and need; and freedom to obtain fuel affordably and conveniently. The Partnership is being jointly implemented with DOE's Hydrogen, Fuel Cells, and Infrastructure Technologies (HFCIT) Program. To complement the FreedomCAR partnership, President Bush has announced a Hydrogen Fuel Initiative, a new national commitment to move hydrogen fuel cell cars from the laboratory to the showroom. The concept is simple yet profound—create automotive operating systems that run on hydrogen rather than gasoline. The groundbreaking plan will transform our nation's energy future, as we shift from hydrocarbon-based energy supplies to hydrogen-based power. Activities dealing with transportation-related fuel cells and hydrogen infrastructure are funded by the HFCIT Program, while the balance of R&D activities, and Partnership direction and support, are funded by the FreedomCAR and Vehicle Technologies Program.

Furthering Vehicle Technologies

Along with FreedomCAR activities, other areas of RD&D addressed by the Program include vehicle systems; simulation and validation; hybrid and electric propulsion including energy storage and power electronics; advanced engine technologies including combustion and emission control; development of cost-effective propulsion and lightweight materials, and materials-manufacturing processes; advanced petroleum-based fuels and non-petroleum fuels and lubricants.

Another initiative of the Program is the 21st Century Truck Partnership. Through this partnership, the heavy-duty truck and bus industry and major Federal agencies are working cooperatively on technologies to make our nation's trucks safer, cleaner, and more efficient. Industry and government partners have developed a common vision: our nation's trucks and buses will safely and cost-effectively move larger volumes of freight and greater numbers of passengers while emitting little or no pollution and dramatically reducing the dependency on foreign oil. Ultimately, the Partnership seeks safe, secure, and environmentally friendly trucks and buses that use sustainable and self-sufficient energy sources, enhancing America's global competitiveness.

Although the primary focus of the FreedomCAR and Vehicle Technologies Program is on long-term RD&D, collaboration with vehicle manufacturers and suppliers is emphasized, so that the technologies can be commercialized as efficiently as possible. For example, the Program supports highly-trained, highly-educated technical staffs and user facilities through the DOE laboratories, providing the automotive community with expertise for unbiased testing and evaluation of its products and technologies.

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

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